

Patent Claims

1. A nozzle for a delivery device for fluids comprising an inlet side and an outlet side wherein the outer surface of the outlet side is produced by microtechnology or
5 nanotechnology.
2. The nozzle according to claim 1 comprising at least one nozzle opening.
3. The nozzle according to claim 1 comprising at least two nozzle openings oriented
10 so that the jets of fluid emerging from them intersect.
4. The nozzle according to claim 1 wherein the nozzle is formed from at least two constructional units.
- 15 5. The nozzle according to claim 4 wherein the constructional units comprise superimposed plates, at least one of the plates produced by microtechnology, so that the plates lying one on top of the other define, on one side, a fluid inlet connected to a channel system and/or a filter system which then opens into one or more fluid outlets.
- 20 6. The nozzle according to claim 5 wherein the nozzle has at least two nozzle outlets oriented towards one another.
7. A nozzle system for a device for delivering fluids, comprising a nozzle and a nozzle holder and/or a check nut with an end face which comprises a through-bore or
25 hole and the inside of which is in contact with the fluid outlet side of the nozzle, one or more nozzle openings being located in or below the bore and/or a check nut, the end face of which has a through-bore or hole and which is in contact with the nozzle holder on its end face or with the nozzle on its fluid outlet side, characterised in that at least one of the following surfaces is produced by microtechnology or nanotechnology:
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 - the outer surface of the fluid outlet side of the nozzle,
 - the outer surface of the end face of the nozzle holder,

- the side wall of the bore or hole of the nozzle holder,
- the outer surface of the end face of the check nut, or
- the side wall of the bore or hole of the check nut.

5 8. The nozzle system according to claim 7 wherein the nozzle holder comprises a bore or hole which is constructed as an inner recess which widens out continuously from the nozzle opening.

10 9. The nozzle system according to claim 7 wherein the check nut comprises a bore or hole which is constructed as an inner recess which widens out continuously from the nozzle opening.

15 10. The nozzle system according to claim 8 wherein the side of the recess remote from the nozzle opening is produced by microtechnology or nanotechnology.

11. The nozzle system according to claim 7 wherein the nozzle comprises an outlet side and an inlet side.

12. A delivery device for fluids comprising a nozzle according to claim 1.

20 13. A delivery device for fluids comprising a nozzle system according to claim 7.

14. A delivery device according to claim 13 comprising a lower and an upper housing part mounted to be rotatable relative to one another, the upper part of the housing

25 containing a spring housing with a spring which is tensioned by rotating the two housing parts by means of a locking clamping mechanism and is released by pressing a release button on the upper part of the housing, the spring moving a power take-off flange connected to a piston on the lower end of which a container can be fitted, and at the upper end of which are found a valve and a pressure chamber which is connected for fluid transmission to the nozzle or the nozzle system formed in the upwardly open part of the upper housing part.

15. The delivery device according to claim 12 wherein the device is an inhaler or atomiser for delivering medicinal or pharmaceutical fluids.

5 16. The delivery device for pharmaceutical fluids according to claim 15 comprising surface structure elevations and/or depressions with a height/depth of 0.1 to 100 microns at least on one of the following surfaces:

10 - the outer surface of the liquid outlet side of the nozzle,
 - the outer surface of the end face of the nozzle holder,
 - the side wall of the bore or hole of the nozzle holder,
 - the outer surface of the end face of the check nut, or
 - the side wall of the bore or hole of the check nut.

15 17. The delivery device for pharmaceutical liquids according to claim 16 wherein the spacings between the elevations and depressions are in the range from 0.1 to 200 microns.

20 18. The delivery device for pharmaceutical liquids according to claim 16 wherein at least 20% of the corresponding surface is produced by microtechnology or nanotechnology.

25 19. The delivery device for pharmaceutical liquids according to claim 16 wherein the elevations and/or depressions are formed by hydrophobic materials, glass and/or ceramics and/or metals and/or plastics selected from polyethylene, polypropylene, polycarbonate, polyacrylate, polyester and silanes.

30 20. The delivery device for pharmaceutical liquids according to claim 16 wherein the elevations and/or depressions are formed by subtractive or additive treatment of the surfaces, the treatment selected from stamping, etching, laser ablation, galvanic machining, adhesively attaching a structured film, adhesion of a powder, spraying with suspensions and depositing sublimates.